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INFLUENZA IN CANADA
1994-1995 SEASON

From October each year to the following May, the Laboratory Centre for Disease Control (LCDC) maintains a program for the national surveillance of influenza. This program is supported by a number of laboratories and provincial and territorial epidemiologists who collaborate by exchanging information on cases, laboratory identifications and outbreaks. During the 1994-1995 season these surveillance activities included the collection of weekly aggregated reports of virus identifications by laboratories via an interactive voice response (IVR) system. Participating laboratories submitted detailed case-by-case reports of laboratory-confirmed infections and provincial and territorial health departments provided weekly assessments of influenza-like illness activity in the community.

Weekly summaries of influenza surveillance data were made available via FAX*link* and included tabulated details of isolations by laboratory as well as graphic representation of reporting trends. In addition, weekly summaries of influenza activity in North America and Europe were included in the *News Brief* sent to provincial and territorial epidemiologists and laboratory directors. Short surveillance reports on respiratory virus activity, including influenza, were included monthly in the *Canada Communicable Disease Report* (CCDR).

This report summarizes case-by-case data on laboratory-confirmed influenza infection and reports of influenza-like illness for the 1994-1995 season. Comparison is made with the previous four seasons: 1990-1991, 1991-1992, 1992-1993, and 1993-1994[1,2,3].

Methods

Laboratories participating in the surveillance program reported isolations and identifications made by direct antigen detection and seroconversion, i.e., ≥ four-fold rise in titre by any method. Data for laboratory-confirmed cases are presented by the province from which the specimen originated (some laboratories received out-of-province samples) and were analyzed by week of onset of illness and the age of the case.

Provincial and territorial epidemiologists reported weekly on the presence and level of influenza-like illness in the community. This was assessed at one of four levels: no reports of influenza-like illness, sporadic cases, localized outbreaks, and widespread outbreaks. Criteria for describing categories may have varied between jurisdictions making direct comparisons difficult; however, the purpose of collecting the information was primarily to obtain an indication of the extent of illness in the community.

Laboratory-confirmed influenza

During the 1994-1995 influenza surveillance period (1 October, 1994 to 10 June, 1995), a total of 1,431 cases were reported to LCDC by 17 laboratories in eight provinces (Table 1).

The variation in numbers of confirmed cases and virus distribution between provinces should be interpreted with caution. The figures are likely to reflect differences in reporting practices and criteria, and availability of diagnostic services, as well as population size and distribution.

The type of virus identified and the number are shown by province in Table 2. Both influenza A and B viruses circulated, although the majority (75%) of confirmed cases were type A virus; of those strains further subtyped, H_3N_2 (102) dominated, although a small number (seven) of subtype H_1N_1 was also recorded. Influenza B virus accounted for the remaining 25% of confirmed infections. A more detailed description of strains identified and characterized in the 1994-1995 season was published recently in the CCDR[4].

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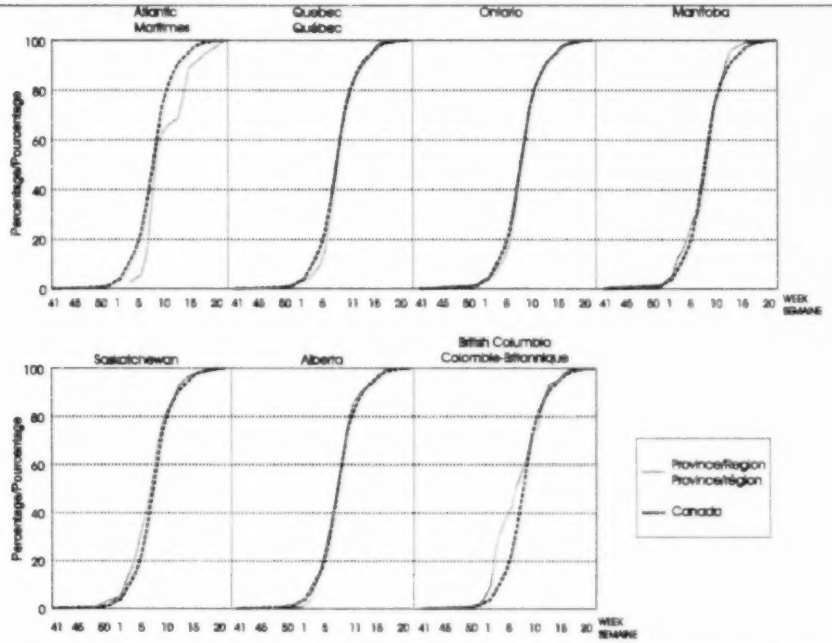
Table 1
Laboratory-confirmed cases of influenza reported to LCDC by laboratory, Canada 1994-1995

Province	Laboratory	Number of cases
Newfoundland	Public Health Laboratory, St. John's	10
Nova Scotia	Victoria General Hospital, Halifax	24
Quebec	*Laboratoire de santé publique du Québec*, Sainte-Anne-de-Bellevue	212
Ontario	Children's Hospital of Eastern Ontario	68
	Kingston Public Health Laboratory	5
	Central Public Health Laboratory	367
	Hospital for Sick Children, Toronto	89
	Toronto General Hospital	5
	St. Joseph's Hospital, Hamilton	31
	St. Joseph's Hospital, London	10
	Public Health Laboratory, Thunder Bay	2
Manitoba	Cadham Provincial Laboratory, Winnipeg	113
Saskatchewan	Saskatchewan Department of Health, Regina	119
	Saskatchewan Department of Health, Saskatoon	3
Alberta	Provincial Laboratory of Public Health for Northern Alberta, Edmonton	168
	Provincial Laboratory of Public Health for Southern Alberta, Calgary	106
British Columbia	Division of Laboratories, Health Branch, Vancouver	99
TOTAL		1,431

Figure 1
Cumulative percentages of laboratory-confirmed cases of influenza by week, Canada, 1994-1995



The cumulative percentages of laboratory-confirmed cases are shown by week for Atlantic Canada and the remaining provinces in Figure 1. Cases for the Atlantic region are combined because of the small numbers of reports received. The cumulative percentage for each province is shown against the total for all Canada. There was sporadic activity in most provinces in the autumn with the earliest confirmed cases reported by Ontario. However, reporting activity in all jurisdictions began to increase in late December and January. Activity then continued into May in all provinces. The latest confirmed cases were reported by Saskatchewan and Newfoundland.

The proportionate distribution of cases by age indicated that most laboratory-confirmed infections were recorded in children < 5 years (34%), half of which were reported in infants < 1 year. This indicated an increase compared with the 1993-1994 season when 28% of cases were in this age group. There was, however, a decline in the proportion of cases aged ≥ 65 years (16%) compared with 27% in the previous season (Figure 2).

Method of laboratory confirmation

Virus isolation (1,029;72%) and direct antigen detection (267;19%) were the most commonly reported methods for laboratory confirmation of influenza infection. The remaining (135;9%) cases for which information was available were confirmed by serology. This distribution compares with 50% of confirmations made by virus isolation, 16% by direct

antigen detection and 34% by serology in the previous season. The majority (98%) of confirmations in young children (aged < 5 years), in those aged 5 to 44 years (85%), and in adults aged ≥ 44 years (85%) were by virus isolation or direct antigen detection. This indicated a marked increase in identifications by these methods in ages > 5 years compared to the previous season when 34% and 60% of identifications in those 5 to 44 and ≥ 45 years, respectively, were by serology.

Influenza activity during the 1994-1995 season

The distribution, over time, of virus identifications reported to LCDC is shown in Figure 3. Early reports were received in mid-late October; however, peak activity was not observed until March, and reporting continued up to June. Influenza A had a more defined peak than influenza B.

The 1994-1995 influenza season is compared with the previous four seasons in Figure 4. The late peak was reminiscent of the 1992-1993 season, which was also marked by concurrent circulation of influenza A and B viruses. The early predominant strain of influenza A virus A/Beijing/32/92(H_3N_2) was similar to the predominant A strain that has circulated since 1992-1993 and was related to the dominant strain in 1991-1992. However, the March peak was due largely to A/Shangdong/09/93-like and A/Johannesburg/33/94-like strains, which appeared after April. Influenza B strains circulating in 1994-1995 most closely resembled B/Quindao/102/91[4].

Extent of influenza-like illness

The extent of influenza-like illness was reported weekly by provincial and territorial epidemiologists from seven jurisdictions, six of which recorded some level of activity during the season (Figure 5). The criteria for describing the extent of influenza-like illness in the community may vary between jurisdictions, making direct comparisons difficult; however, the information represented in the figure gives a broad indication of the occurrence and extent of illness.

The trends observed generally corresponded with the recording and peaking of laboratory-confirmed infection. Peak activity occurred late in the season, in March and April, and only

Figure 2
Proportionate distribution of laboratory-confirmed cases of influenza by age group, Canada, 1994-1995

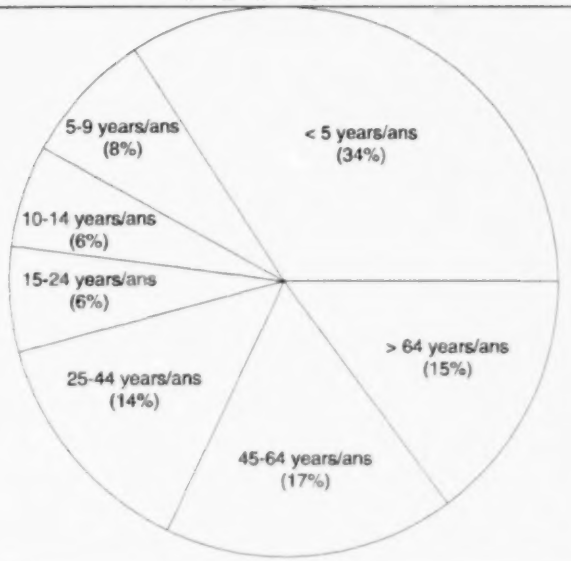
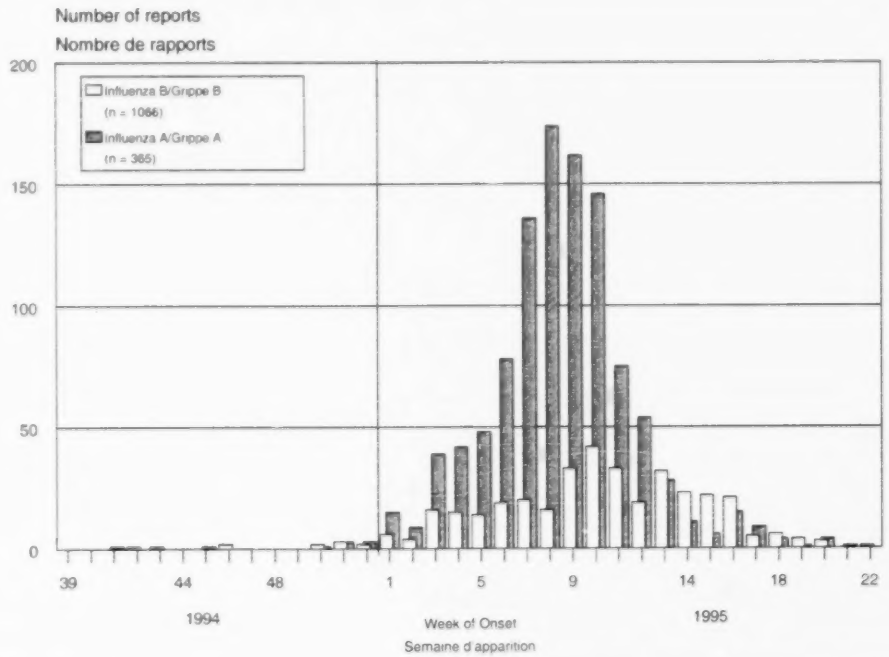


Figure 3
Influenza in Canada by type and by week of onset, 1994-1995



one province, Saskatchewan, recorded widespread outbreaks, which occurred between mid-February and late March.

Discussion

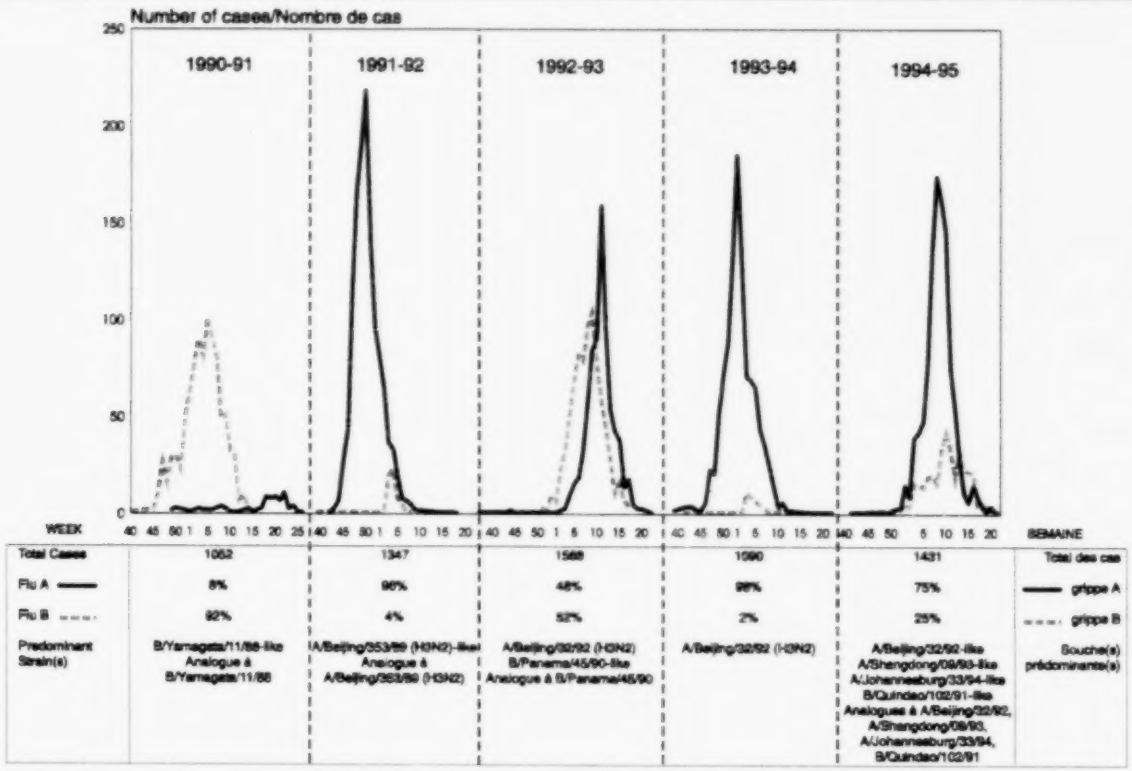
The 1994-1995 influenza season was characterized by moderate activity, although the number of recorded laboratory identifications was higher than in the previous winter, continuing a trend observed for several seasons. There was little activity in the autumn of 1994; increased numbers of cases were not recorded until January 1995, while peak reporting was not observed until mid-March. Four provinces, Newfoundland, Prince Edward Island, Ontario and British Columbia, reported localized outbreaks and only Saskatchewan recorded widespread outbreaks.

Table 2
Laboratory-confirmed cases of influenza by province and influenza type and subtype, Canada, 1994-1995

Influenza Type	NFLD	PEI	NS	NB	QUE	ONT	MAN	SASK	ALTA	BC	TOTAL
TYPE A Not subtyped	7	5	11	3	134	431	83	79	145	59	957
H_1N_1	—	—	—	—	—	—	—	1	—	6	7
H_3N_2	—	—	—	—	—	21	—	8	50	23	102
Total A	7	5	11	3	134	452	83	88	195	88	1,066
TYPE B	5	1	2	1	91	111	30	34	79	11	365
TOTAL	12	6	13	4	225	563	113	122	274	99	1,431

Both influenza A (mainly H_3N_2 subtype) and influenza B viruses circulated concurrently, peaking at the end of February and in early March, respectively, although the influenza B peak was less well defined. A similar pattern of infection was observed in

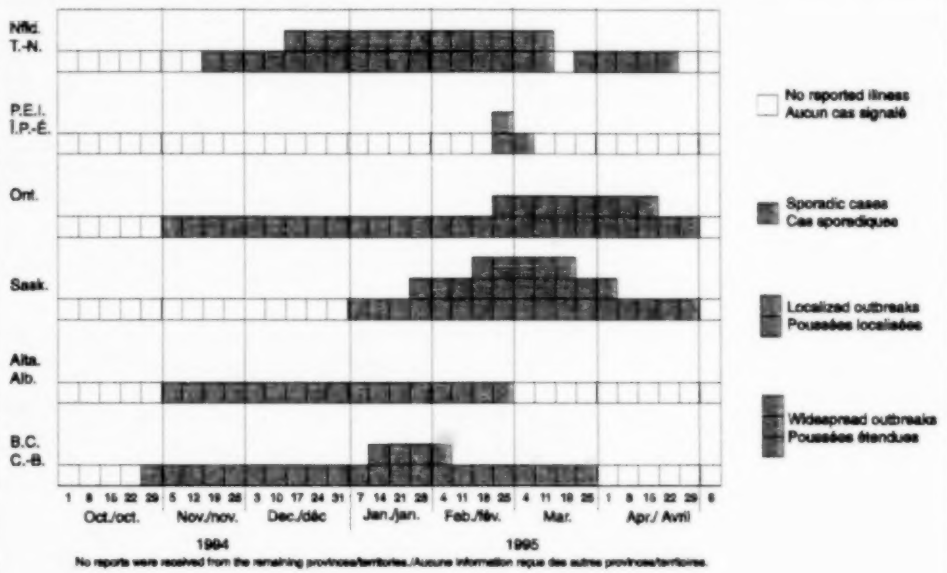
Figure 4
Seasonal distribution of laboratory-confirmed influenza infections, Canada, 1990-1995



the United States and only moderate activity, due to both influenza A and B virus activity, was reported by most European countries as indicated by WHO reports of influenza activity[6,7]. The pattern of alternate years showing elevated levels of influenza B virus activity continued. However, the proportion of influenza B virus isolations in high influenza B reporting seasons has successively declined from 92% of identifications in 1990-1991, to 52% in 1992-1993, to 25% in 1994-1995.

Influenza A/Beijing/32/92 (H_3N_2) was the predominant influenza A strain circulating in Canada during the early part of the 1994-1995 season. This strain is either similar or related to the common strains of influenza A circulating since 1991-1992. A/Shangdong/09/93-like and A/Johannesburg/33/94-like strains, however, predominated in the late season. The circulation of antigenically similar strains for a prolonged period may help explain features of the current trend of only moderate activity for several years, with a relatively high proportions of infections in the very young (< 1 year) compared to other ages, this being the age group most likely to be widely susceptible to the current strain.

Figure 5
Extent of infuenza-like illness reported weekly from six of seven jurisdictions, Canada, 1994-1995


Nfld. T.-N.
P.E.I. I.P.-É.
Ont.
Sask.
Alta. Alb.
B.C. C.-B.
1 8 15 22 29 5 12 19 26 3 10 17 24 31 7 14 21 28 4 11 18 25 4 11 18 25 1 8 15 22 29 6
Oct./oct. Nov./nov. Dec./déc Jan./jan. Feb./fév. Mar. Apr./ Avril
1994
1995
No reports were received from the remaining provinces/territories./Aucune information reçue des autres provinces/territoires.
No reported illness
Aucun cas signalé
Sporadic cases
Cas sporadiques
Localized outbreaks
Poussées localisées
Widespread outbreaks
Poussées étendues

The National Advisory Committee on Immunization (NACI) published its recommendations on the constituents of the trivalent influenza vaccine for the 1995-1996 season in June 1995[5]. The strains contained in the vaccine were selected to reflect the viruses circulating in the latter part of the 1994-1995 season and were reviewed in detail in a recent issue of CCDR[4]. The NACI statement incorporates a separate section concerning recommendations for HIV-infected persons and provides more background information relating to influenza immunizations in general.

The influenza surveillance program is designed to monitor the occurrence and severity of influenza activity in Canada and to provide information on circulating viruses for planning and control purposes. Information derived from the surveillance program is made available weekly as summary reports and in monthly respiratory disease surveillance articles in the CCDR. The weekly reports can be obtained by dialing the LCDC FAX*link* number (613-941-3900) from a telephone-equipped fax machine. Laboratories wishing to participate in the surveillance program should contact Mr. Peter Zabchuk, Division of Disease Surveillance, Bureau of Infectious Diseases, Laboratory Centre for Disease Control at 613-952-9729.

Acknowledgements

We would like to thank the staff of the laboratories who participated in the respiratory virus surveillance program during the 1994-1995 season, and Dr. John Weber, Laboratory for Surveillance, Influenza and Viral Exanthema, LCDC, for information regarding typing of virus strains. We also wish to express our thanks to provincial and territorial epidemiologists for providing information about the extent of influenza-like illness in their jurisdictions.

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5. National Advisory Committee on Immunization. *Statement on influenza vaccination for the 1995-96 season.* CCDR 1995;21:105-13.

Source: *Division of Disease Surveillance, Bureau of Infectious Diseases, Laboratory Centre for Disease Control, Ottawa, Ontario.*

Announcement

FOURTH CANADIAN PHARMACOEPIDEMIOLOGY FORUM

29-30 April, 1996
SHERATON CAVALIER, SASKATOON

Call for Abstracts

This two-day forum will focus on various current activities and issues in pharmacoepidemiology in Canada. In addition, for the second time, the Forum will be preceded by a short workshop on the use of databases in pharmacoepidemiology to be held **28 April, 1996**. Abstract topics should be related to epidemiologic research on drugs. Deadlines for submitting abstracts is **1 February, 1996**.

For additional information and abstract forms, please contact **Dr. Ineke Neutel, Drugs Directorate, Health Canada, P.L. #1920A, Ottawa, Ontario, K1A 0L2, Telephone: (613) 954-6745, FAX: (613) 941-6458**.

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